

TWO THEORIES OF ENVIRONMENTAL REGULATION*

BY JOHN HASNAS

I. INTRODUCTION

Most essays on environmental regulation begin by referring to "The Tragedy of the Commons."¹ This one is no exception. Garrett Hardin's seminal article is usually cited for its account of how environmental degradation results from the tendency of human beings to overexploit resources held in common—what he calls the tragedy of the commons. But "The Tragedy of the Commons" also has much to tell us about what are, and what are not, effective means of avoiding such potentially tragic consequences.

In this essay, I extrapolate from Hardin's article to draw some conclusions regarding environmental regulation. Specifically, I argue that there are two distinct forms of environmental regulation, and that proper public policy analysis requires a comparative assessment of which constitutes the more effective means of combating any particular environmental problem. I begin in Section II by describing the three basic lessons of "The Tragedy of the Commons." In Section III, I briefly rehearse the familiar application of the first of these lessons to demonstrate the causes of environmental degradation. In Section IV, I apply the second of these lessons to demonstrate that environmental protection is correctly understood as a public policy problem. In Section V, I apply the third lesson to demonstrate that there are two potentially effective approaches to environmental regulation: common law privatization, and legislative restriction of access. I argue that common law privatization, which is frequently more effective, is typically and improperly ignored by public policy analysts. I conclude by suggesting that sound public policy analysis of environmental issues must include a comparative assessment of the two approaches to environmental regulation.

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¹ Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (1968): 1243–48.

II. THE LESSONS OF “THE TRAGEDY OF THE COMMONS”

“The Tragedy of the Commons” teaches three distinct lessons. The first, that commonly held resources will be overexploited,² is the one most frequently associated with the article. The other two—that the tragedy of the commons cannot be remedied by appealing to the consciences of those exploiting the resource³ and that the only solutions to the tragedy are to privatize or restrict access to the resource⁴—are equally important, if less frequently remarked upon.

Hardin’s most famous observation is that holding valuable resources in common presents a collective action problem even when the resources are renewable ones. Any renewable resource has a carrying capacity—a maximum number of individuals that can utilize the resource indefinitely without permanently damaging the ability of the resource to replenish itself. As long as the number of individuals exploiting a resource remains below the carrying capacity, the resource will continue to exist and provide benefit. Once the carrying capacity is exceeded, however, the resource will be totally consumed by the present users and yield no future benefit. When such a resource is held in common, the individuals utilizing it gain 100 percent of the benefit of their activities for themselves, but share the costs of their activities with all other users of the resource. As a result, it is in each individual’s rational self-interest to continue to expand his or her use of the resource, despite the fact that if all do so, the carrying capacity of the resource will be exceeded and the resource destroyed. This is the tragedy of the commons.

Hardin illustrates this point with the example of herdsmen grazing their livestock on a common pasture.⁵ As long as the number of livestock remains below the pasture’s carrying capacity, the grass will have time to regrow between grazings. Yet each herdsman knows that if he adds an animal to his herd, he will gain the entire benefit of the sale of the animal for himself, but share the costs the animal imposes on the pasture with all other herdsmen. Therefore, it always makes sense for him to add the animal. Since all herdsmen reason in this way, the group continues to add animals to the pasture until its carrying capacity is exceeded and the pasture is destroyed.

Hardin’s second point is that the tragedy of the commons cannot be remedied by appealing to the consciences of those exploiting the resource. At first blush, one might think that the destruction of commonly held resources can be avoided simply by acquainting those exploiting the resource with the situation and calling upon them to exercise self-restraint. Hardin points out, however, that people vary in their receptiveness to appeals to act against their own interests. The more scrupulous or public-spirited among those

² See *ibid.*, 1244.

³ See *ibid.*, 1246–47.

⁴ See *ibid.*, 1245.

⁵ See *ibid.*, 1243.

exploiting a resource may well respond to an appeal to their conscience to restrict their usage, and hence their personal gain, in order to preserve the resource for all. But the less scrupulous will reason that because others are exercising self-restraint, they can expand their use of the resource without having to fear the resource's destruction. Thus, they will do so, gaining a competitive advantage over their more conscientious brethren. Over time, this competitive advantage will flush the more scrupulous out of the marketplace. As a result, only those who are not receptive to appeals to conscience will be left exploiting the resource, which they will do until the resource's carrying capacity is exceeded and the resource is destroyed. As Hardin puts it, in a commons, conscience is self-eliminating.

This may be illustrated with Hardin's own example of herdsmen utilizing a common pasture. Imagine that the herdsmen hold a meeting at which the danger of exhausting the pasture is explained and all are called upon to voluntarily refrain from adding animals above a certain number to their herds. The herdsmen, who vary in how receptive they are to such appeals, can be ranked on what may be called a "conscientiousness scale." At the top of the scale are the most conscientious herdsmen—those who regard their word as their bond or who are committed to the common good as a matter of principle. In the middle of the scale are the ordinarily conscientious herdsmen—those who normally keep their agreements and are usually willing to do their part in projects to achieve the common good. And at the bottom of the scale are the least conscientious herdsmen—those who are motivated primarily by self-interest and participate in projects to achieve the common good only to obtain benefits for themselves.

At first, all the herdsmen voluntarily limit their herds. However, before long, those at the bottom of the conscientiousness scale reason that because the other herdsmen are exercising self-restraint, they can increase the size of their herds without overgrazing the pasture. They do so, and reap gains relative to their more conscientious fellows. Some of the herdsmen in the middle of the conscientiousness scale are willing to limit their personal gain as long as everyone does so, but not if it means that others will gain at their expense. As they become aware of the actions of their lower-ranked brethren, they too begin to add animals to their herds to avoid being a "chump." Soon, enough herdsmen are violating the limit so that those even higher up on the scale, who would not abandon their self-restraint unless a significant number of others do, also begin to increase the size of their herds. Before long, the only herdsmen observing the limit are the most conscientious, for whom doing so is a matter of principle. But these herdsmen are placed at such a competitive disadvantage that eventually they can no longer operate profitably. At that point, the only herdsmen utilizing the pasture are those who are not receptive to an appeal to their conscience for self-restraint. Conscience has been eliminated from the pasture.

Hardin's third point is that the only solutions to the tragedy of the commons are to privatize the commonly held resource or to restrict access

to it. Hardin published his essay in the journal *Science* because he was arguing that there are problems for which there are no technological solutions.⁶ His point was that as long as the incentive structures of an open-access commons remain operative, the resource will be destroyed regardless of any technological progress human beings may make. Hardin contended that the only way to avoid the tragedy is to alter the incentive structures, and that there are only two ways to do this—privatize the commons or restrict access to it.

Privatizing the commons means giving those utilizing the resource an ownership interest in a portion of it. As owners, individuals have the right to exclude others from using their portion of the resource. This means not only that an individual's effort to preserve his or her portion of the resource cannot be defeated by costs imposed by others, but also that the individual cannot export his or her costs onto others, all of whom have a similar ownership interest. With regard to his or her portion of the former commons, each individual reaps 100 percent of the benefit of using the resource, but also bears 100 percent of the costs of doing so. Under these conditions, it is not in anyone's rational self-interest to exceed the carrying capacity of his or her portion of the resource. Hence, privatization aligns the interests of individuals exploiting the resource with the common good of its preservation. Using economic terminology, privatization internalizes the social cost of using the resource.

In the example of the common pasture, privatization means assigning each herdsman a portion of the pasture as his private property. Since only the individual herdsman can graze animals on his land, he does not have to fear that animals from other herds will overgraze and destroy his portion of the pasture. However, because he must graze his animals exclusively on his own land, he bears the entire cost his animals impose on the pasture. To remain in business, therefore, he must ensure that his herd does not exceed the carrying capacity of his portion of the pasture. Because all the herdsman utilizing the privatized pasture have the same incentives, the carrying capacity of the pasture as a whole will not be exceeded, and the pasture will be preserved.

Restricting access to the commons means enlisting a coercive agency to limit the amount of use individuals can make of a common resource. This may be done by empowering some agency to impose financial penalties or other sanctions on any party using more of the resource than he or she is allotted. As long as the fine (properly discounted by the probability of the violation going undetected) is large enough or the alternative sanction fearful enough, the cost of overexploiting the resource will outweigh the benefit that may be obtained by doing so. When the enforcement mechanism is sufficiently effective, the incentives of the individuals exploiting the resource are altered so that it is no longer in anyone's rational self-

⁶ See *ibid.*, 1243.

interest to exceed his or her allotment. Hence, the carrying capacity of the resource will not be exceeded and the resource will be preserved.

Again using Hardin's example of the pasture for illustrative purposes, the herdsmen could collectively hire a "regulator" empowered to impose fines or other sanctions on any herdsman found to be grazing animals beyond his allotment on the pasture. Although unscrupulous herdsmen may be tempted to add animals to their herd in excess of their allotment, fear of the sanction the regulator will impose causes them to resist the temptation. As a result, their more scrupulous colleagues are not tempted to exceed their allotment by the knowledge that others are gaining at their expense. The regulator's threat of coercion supplies what the bald appeal to conscience lacks, and the agreed-upon limits are observed.

III. LESSON ONE APPLIED: ENVIRONMENTAL DEGRADATION

The first lesson of "The Tragedy of the Commons," that commonly held resources will be overexploited, may be applied in a perfectly straightforward manner to the problem of environmental degradation. To the extent that natural resources are held in common, they are subject to the logic of "The Tragedy of the Commons." Consider, for example, the depletion of fishing stocks. This is merely Hardin's parable of the herdsmen transferred to the sea. When fisheries are open to all, each fisherman gains the full benefit of all the fish he takes, but shares the cost of the depletion of the fishery with all other fishermen. Should any one of the fishermen elect to restrict his take to allow the fishery to regenerate, his effort will be thwarted by other less enlightened or less conscientious fishermen who simply increase their take. Hence, it is in every fisherman's interest to take as many fish as he can regardless of the effect this will have on the future usefulness of the fishery.

The same logic explains problems such as the deforestation of public land—each logger personally benefits from every tree he or she harvests, but has no incentive to replant because there is no guarantee that the replanted trees will not be harvested by others—and the loss of endangered species—anyone killing an African elephant personally benefits from the sale of its ivory tusks, but has no incentive to restrain himself in order to give the animal time to reproduce, because there is nothing to stop another hunter from immediately killing the animal and taking its tusks.⁷

⁷ This logic applies even to species that have no commercial value in themselves. Farmers and ranchers kill gray wolves because they gain the full benefit of the livestock they thereby protect. Loggers eliminate the habitat of spotted owls because they gain the full benefit of the wood they harvest. Oil companies disrupt the mating patterns of caribou because they gain the full benefit of the oil they extract. Yet these parties share the cost of the loss of species with the world at large. Further, voluntarily refraining from their profit-making activity will not save any animals, since others will move in to exploit the opportunities they forgo.

This lesson also explains pollution, which arises not because something is being removed from the commons, but because something is being put into it. Consider water pollution. Like any other resource, a river has a carrying capacity. As long as the waste that is discharged into it remains below a certain level, the river's flow is able to purify it.⁸ Factories operating along the river frequently generate sludge or toxic chemicals as by-products of their manufacturing processes. Paying others to dispose of such waste is a cost to the factories that can be avoided by discharging the waste into the commonly held river. By doing so, the factory reaps 100 percent of the benefit of avoiding this cost, yet shares the cost of the spoliation of the river with the world at large. Therefore, it is always in the factory owner's interest to discharge the waste into the river. And because all factory owners operating along the river reason in the same way, each increases the amount of waste he or she discharges into the river until the carrying capacity is exceeded.

The story is the same for air pollution. Factories, power plants, and automobiles produce soot, sulfur dioxide, ozone, and greenhouse gases as undesirable by-products of their operation. Discharging them into the commonly held atmosphere provides factory, utility, and car owners with the full benefit of reduced waste-disposal costs while sharing the cost of the spoliation of the air with the world at large. Hence, it is in their interest to discharge the pollutants into the air regardless of the deterioration in overall air quality.

IV. LESSON TWO APPLIED: PROTECTING THE ENVIRONMENT IS A PUBLIC POLICY PROBLEM

The second lesson of "The Tragedy of the Commons" is that, in a commons, conscience is self-eliminating. The incentive structures of a commons are such that those who respond to appeals to their conscience—appeals to do the right thing—are placed at a competitive disadvantage with respect to those who do not. Over time, this competitive disadvantage eliminates the conscientious from the commons, leaving only the unscrupulous exploiting the commonly held resource. What this tells us is that environmental problems are problems of collective action—that is, public policy problems.

Many important ethical issues concern the discovery and application of the proper standards for individual action—the proper way for individual entities, whether human or corporate, to behave. Public policy issues concern the proper standards for collective action—the proper rules and decisions that will govern the actions of all members of a particular community or society. For example, the question of whether an individual woman

⁸ In "The Tragedy of the Commons," Hardin notes the old saying: "Flowing water purifies itself every 10 miles." *Ibid.*, 1245.

should have an abortion is purely an ethical question. The question of whether any women should be permitted to have an abortion—or whether abortion should be legal—is a public policy question. “The Tragedy of the Commons” demonstrates that environmental problems are public policy problems that cannot be resolved merely by exhorting individuals to behave more ethically.

Recognizing that environmental problems are public policy problems is far from a trivial observation, for it implies that a significant portion of contemporary environmental activism is misguided. Over the past four decades, public awareness of and concern over environmental problems has skyrocketed. Air pollution, water pollution, the plight of endangered species, acid rain, pesticide use, the increasing generation of nonbiodegradable waste, the depletion of the ozone layer, and global warming are examples of environmental problems that have generated considerable public alarm. Environmental activists have reacted with calls for individuals, corporations, and even nations to alter their behavior. Individuals have been exhorted to drive smaller, less comfortable automobiles, purchase more expensive organic foods, and alter their lifestyle to reduce their “carbon footprint”; corporations have been urged to adopt profit-reducing programs of corporate social responsibility or sustainable development;⁹ and nations have been called upon to voluntarily restrain their industrial development and accept slower economic growth to reduce their greenhouse gas emissions. These are direct appeals to the consciences of individual parties to place the common good ahead of self-interest.

In calling on individual actors to behave better, activists are treating environmental problems as individual rather than collective action problems—problems that arise because individuals either do not understand how or are unwilling to behave in the ethically proper way. Hardin’s second lesson teaches that treating environmental problems as problems of improper individual behavior is not only futile, but self-defeating. Individuals who bear the discomfort of driving smaller cars or incur the expense of purchasing a hybrid in an effort to combat smog merely reduce the demand for oil, which keeps its price low enough for less conscientious citizens to indulge their desire to drive Hummers. Firms that reduce their profit margins by adopting programs of corporate social responsibility or sustainable development create opportunities for less scrupulous entrepreneurs to capture their market share by employing less costly but more environmentally damaging technology, and make themselves ripe for takeover by new management promising to make the corporation “lean and mean.” Nations whose citizens experience slower material welfare gains due to restrictions on industrial development facilitate other nations’ efforts to

⁹ Sustainable development is defined as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs.” World Commission on Environment and Development, “Our Common Future,” delivered to the UN General Assembly, UN Doc. A/42/427 (August 4, 1987).

attract the displaced industries by offering a less regulated business environment. In all such cases, conscientious parties bear the costs of efforts to protect the environment that are rendered ineffective by the actions of their less conscientious counterparts, who profit at their expense.

The second lesson of "The Tragedy of the Commons" is that environmental problems are public policy problems—collective action problems that must be addressed systemically. Hence, it is counterproductive to address such problems by exhorting individuals to more ethical behavior.¹⁰ As simple as this lesson is, it is one that many have not learned, at least if we are to judge by the literature and activities of many contemporary environmental activist groups.

V. LESSON THREE APPLIED: TWO THEORIES OF ENVIRONMENTAL REGULATION

Once it has been recognized that environmental problems are public policy problems that cannot be resolved by ethical appeals, it becomes clear that the only solution lies in the systemic reform of the incentive structures under which individual parties act. Hardin's third lesson is that in the context of commonly held resources, there are only two ways to alter incentives to align individuals' personal interests with the preservation of the resource: privatize the resource or restrict access to it. Unfortunately, half of this lesson is frequently overlooked by contemporary public policy analysts.

To assert that there are *only* two ways to resolve environmental problems is also to assert that there *are* two ways to resolve environmental problems. This implies that determining the optimal solution to environmental problems requires a comparative assessment. If environmental problems may be resolved either by privatizing the commonly held resource or by restricting access to it, the question of which approach will be more effective is always in play. Yet the conventional public policy analysis of environmental issues typically ignores the possibility of privatization.

The conventional analysis views decreasing environmental quality as an instance of market failure needing correction by legislation. This analysis derives from the classic market failure argument, which, in simplified form, runs as follows. Individuals functioning in a market contract with each other on terms each finds beneficial. In most cases, this is a good thing. Because each party to the transaction finds the benefits he or she receives to be greater than the costs he or she incurs, both are made better

¹⁰ This does not imply that ethical exhortation cannot play a subsidiary role in advancing public policy solutions. For example, efforts to address environmental problems by restricting access to the commons may be significantly aided by ethical exhortation. To the extent that such exhortation creates a climate in which compliance with the restrictions is seen as a social good, it can lower the costs and increase the efficiency of enforcing the restrictions.

off. And as long as the transaction imposes no costs on anyone else—as long as the contracting parties who receive 100 percent of the benefits of the transaction also bear 100 percent of its costs—society as a whole is made better off as well. However, the contracting parties do not always bear 100 percent of the costs of the transaction. In some cases, their activities impose costs on others who are not parties to the contract. These costs, which are external to the contract or, in economic terminology, negative externalities, are the social costs of private market activity. When the external or social costs are great enough to outweigh the private benefits received by the contracting parties, the transaction is detrimental to society as a whole. Nevertheless, because the private benefits received by contracting parties exceed their private costs, they will proceed with the transaction. In such cases, markets fail to deliver the socially optimal outcome. Hence, government intervention is necessary to correct the market's failure to consider social costs, or, again in economic terminology, to internalize unacceptable negative externalities.¹¹

The first lesson of "The Tragedy of the Commons" is then invoked to apply this argument to the environment. It is noted that because the environment is a commons, private contracting parties personally bear only a small fraction of the costs their activities impose upon it, and hence, on all other members of society. Environmental damage is thus a social cost of market activity that requires legislation such as the Clean Air Acts¹² and Clean Water Acts¹³ to internalize the negative externality.

Note that environmental legislation is a mechanism for restricting access to the commons. The Clean Air and Clean Water Acts restrict the amount and type of things that may be dumped into the nation's air and waters. In general, environmental legislation employs the coercive power of government to threaten individual market actors with sanctions if they over-utilize the protected common resource.¹⁴ Hence, the conventional analysis appears to assume that restricting access is the only solution to environmental problems.

¹¹ For a more precise account of the market failure argument, see Tyler Cowen, "Public Good and Externalities: Old and New Perspectives," in Tyler Cowen, ed., *The Theory of Market Failure: A Critical Examination* (Fairfax, VA: George Mason University Press, 1988), 1-3; and Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), 30-32.

¹² The most significant examples of air pollution control legislation are the Air Quality Act of 1967, 90 Pub. L. No. 148, 81 Stat. 485 (1967); the Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (1970); the Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (1977); and the Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990).

¹³ The most significant examples of water pollution control legislation are the Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (1972); the Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (1977); and the Water Quality Act of 1987, Pub. L. No. 100-4, 101 Stat. 7 (1987).

¹⁴ The exception to this is cap-and-trade legislation, discussed below in Section V.C, which is a hybrid form of legislation that combines restricting access—the cap—with privatization—the trading.

The suppressed premise in the conventional analysis is that privatization is not a viable solution to environmental problems. This is not an unnatural assumption. After all, one cannot build fences around air or water. Nevertheless, it is an inappropriate one that rests on an overly narrow conception of privatization. Obviously, rights cannot be assigned to air, water, migratory animals, and other vagrant environmental resources in the same way they are assigned to land. But privatization is not limited to the creation of entitlements to tangible objects. Privatization refers to any assignment of rights that give individuals a personal interest in preserving a resource. At its most general, the distinction between restricting access and privatizing consists in the difference between punishing those who pursue personal gain by overexploiting a commonly held resource and assigning rights in a way that causes individuals pursuing personal gain to act in ways that preserve the resource.

To the extent that it is possible to assign rights in such a way, the conventional public policy analysis of environmental issues is unsound. Demonstrating that in a commons, market forces produce socially sub-optimal outcomes does not demonstrate that legislation designed to restrict access to the commons is required. It demonstrates only that *either* such legislation *or* an assignment of private rights to the commons is necessary, and that a comparative assessment of the effectiveness of each approach must be made.

To what extent is it possible to assign rights so as to privatize the environment? What mechanism can be used to make such assignments? The fact that the answers to these questions are not obvious is evidence of how myopic much of the public policy community has become with regard to the nature of the Anglo-American legal system.

A. The dual nature of Anglo-American law

The main problem with the conventional argument that environmental problems are instances of market failure needing correction by law is that it contains an extremely blurry image of the law. The law is seen as an undifferentiated mass of rules that regulate human conduct. No attention is paid to the source of the rules or the mechanism by which they are created. Typically, the law is assimilated into its most familiar type—legislation. This view suggests a severe need for legal corrective lenses. For when the Anglo-American legal system is brought into sharper focus, it is clear that it is composed of two distinctly different forms of law—legislation and common law.

Legislation consists of rules of law that are consciously created by those who exercise political power—in liberal democracies, by the political representatives of the community. Thus, in the United States, legislation is the output of the state legislatures and the federal Congress. Legislation is intentionally designed law.

Legislation is the type of law that is familiar to the ordinary citizen. Given that the legal education of most Americans began in elementary school with a video of a bill singing and dancing its way through the House of Representatives and the Senate to be signed by the president,¹⁵ it is not unnatural for them to assume that all law is legislation. Nevertheless, legislation represents only a small portion of the law upon which our commercial society rests. Most of the law that allows citizens to cooperate, trade, and prosper—contract law, property law, commercial law, tort law—arose from the common law, not legislation.

‘Common law’ is a troublesome term, because its contemporary usage does not correspond to the historical process that actually produced the infrastructure of the Anglo-American law. Today, common law is often used to refer to “judge-made” law and is associated with rules of law consciously created by judges in appellate decisions. But this characterization is neither historically accurate nor representative of the contemporary common law system. For most of its history, the common law consisted of rules that were abstracted from a series of cases thought to represent just resolutions of past disputes, or, in William Blackstone’s words, of “general customs; which are the universal rule of the whole kingdom, and form the common law, in its stricter and more usual signification.”¹⁶ More recently, the common law came to be understood as rules that are derived from the examination of specific cases that constitute relevant precedents. Even today, judges are free to depart from precedent and announce new rules only in rare and exceptional cases.

In this essay, I propose to use the term ‘common law’ generically to refer to case-generated law or law that arises from the settlement of actual disputes. This is a rather broad use of the term that encompasses customary law as well as the law that evolved in the traditional common law courts. However, this usage is both appropriate—because much of the English common law, especially tort and commercial law, consists of the older customary law that is incorporated within it—and useful—because it highlights the process of assimilating present cases into the body of established rules that is the essential feature of common law. Common law is the law that evolves over time from past experience. In contrast to intentionally created legislation, for most of its history and for the most

¹⁵ See, e.g., the SchoolHouse Rock video “I’m Just a Bill.” David Frishberg, *I’m Just a Bill* (ABC Publishing, 1973).

¹⁶ William Blackstone, *Commentaries on the Laws of England* (Oxford: Clarendon Press, 1765), 67. Harold Berman explains that “The common law of England is usually said to be itself a customary law. What is meant, no doubt, is that the royal enactments established procedures in the royal courts for the enforcement of rules and principles and standards and concepts that took their meaning from custom and usage. The rules and principles and standards and concepts to be enforced . . . were derived from informal, unwritten, unenacted norms and patterns of behavior.” Harold J. Berman, *Law and Revolution* (Cambridge, MA: Harvard University Press, 1983), 480–81. For a fuller account of the nature of the common law prior to the nineteenth century, see John Hasnas, “The Depoliticization of Law,” *Theoretical Inquiries in Law* 9, no. 2 (2008): 536–41.

part today, common law is “the result of human action, but not the execution of any human design.”¹⁷

Legislation and common law are equally law, but they are law produced by distinctly different processes. Legislation is produced by a political process. Common law is produced by a trial-and-error, evolutionary process. Legislation originates in the actions of those invested with political authority and is imposed on the citizenry to regulate their interaction—law that proceeds from the top down. Common law is law that originates in the uncoordinated actions of the individual members of society and grows to govern human interaction—law that proceeds from the bottom up.

1. The nature of legislation. Legislation is law that is consciously created by the political representatives of the community. This simple statement of the nature of legislation can be misleading unless close attention is paid to the referent of the term ‘political representatives.’ Political representatives are ordinary human beings functioning within the incentive structure of democratic government. They are not ideal types who selflessly pursue the common good. Neither are they the caricature of the corrupt politician. They are neither more nor less virtuous than the ordinary person, and are just as fallible, corruptible, responsive to incentives, and motivated to achieve their personal goals as anyone else.

This point is worth making because legislation is often justified on theoretical grounds that ignore the context in which it is created. This line of argument considers legislation in the abstract and catalogs the ways in which it is superior to common law. Thus, it is noted that because legislation is intentionally created by a guiding human intelligence, it may be used to help construct a more just society in ways that common law cannot. Unlike the common law that grows haphazardly and changes very slowly, legislation can be scientifically crafted to address broad social problems and to ensure that the law keeps pace with the rapidly changing technological and cultural conditions of modern society. Because legislators can recognize potential threats to society’s well-being, they can craft legislation to avert harm before it occurs. Hence, legislation can operate preventatively in a way that common law, which arises in response to harm that has already occurred, cannot.¹⁸ And because legislation can

¹⁷ Adam Ferguson, *An Essay on the History of Civil Society* (1767; New York: Cambridge University Press, 1995), part 3, sec. 2.

¹⁸ This point, which is frequently introduced as an advantage of legislation, is significantly overstated. The common law is not restricted to addressing harm that has already occurred. It can operate prospectively through the mechanism of the injunction. One may sue at common law to enjoin others from engaging in activities that threaten significant future harm. However, the evidentiary standards to obtain an injunction are often quite high. To be granted an injunction that restricts other citizens’ freedom of action requires, in most cases, that the plaintiff demonstrate that the defendants’ activities pose a high probability of irreparable harm. (But see note 49 below, discussing the lower evidentiary threshold for obtaining an injunction in cases of environmental damage due to trespass and nuisance.) Therefore, it is fair to say that legislation can act preventatively in a wider range of cases than does the common law.

reach the full range of human activity, it can be used to enact consciously planned social policies designed to achieve the common good that could never result from the decentralized common law process.

To appreciate the true nature of legislation, however, it must be examined in the context of the real-world political processes that produce it. Such an examination demonstrates that many of legislation's theoretical advantages over common law are chimerical. For example, although legislation has the potential to prevent future harm, politicians are rarely able to correctly identify the threats that need addressing in advance. As a matter of fact, almost all legislation is a reaction to harm that has already occurred. The New Deal legislation followed the Depression. The Patriot Act followed the attack on the World Trade Center. Megan's law,¹⁹ requiring public notification of the presence of convicted sex offenders, is named after Megan Kanka, who was murdered by a convicted sex offender living nearby. But to the extent that legislation is a reaction to a past harm, it is not distinct from common law, the rules of which operate prospectively after the initial decision. Further, even when long-term threats can be identified, the institutional incentives inherent in democratic politics frequently make it difficult to enact legislation addressing them. Federal legislators in the United States have been aware for decades that the Social Security, Medicare, and Medicaid systems are heading toward insolvency. Yet short-term political considerations consistently prevent them from enacting legislation to address this long-term threat. Hence, the inherent limitations on human knowledge and the institutional structure of democratic government make it very difficult to realize the theoretical benefits of effective preventative legislation.

Similarly, legislation presents the opportunity to implement social policies designed to achieve the common good. However, it also presents the opportunity to implement policies that advance the interests of some over those of others in derogation of the common good. Unfortunately, the incentive structures operative within representative government frequently favor the latter outcome. In recent decades, political science scholars and public choice economists have demonstrated *ad nauseam* the myriad opportunities for governmental "rent-seeking," the process by which special interests sway legislation to favor them at the expense of the general public.²⁰ The current essay is not the proper venue to rehearse the spe-

¹⁹ N.J. Stat. Ann. sec. 2C:7 (West 2007).

²⁰ See, e.g., James M. Buchanan and Gordon Tullock, *The Calculus of Consent* (Ann Arbor: University of Michigan Press, 1962); Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1965); William A. Niskanen, *Bureaucracy and Representative Government* (Chicago: Aldine, Atherton, 1971); William F. Shughart II and Laura Razzolini, eds., *The Elgar Companion to Public Choice* (Cheltenham: Elgar, 2001); Bruce L. Benson, "Understanding Bureaucratic Behavior: Implications from the Public Choice Literature," *Journal of Public Finance and Public Choice* 8, nos. 2-3 (1995): 89-117; and Gary J. Miller, "The Impact of Economics on Contemporary Political Science," *Journal of Economic Literature* 35, no. 3 (1997): 1173-1204.

cifics of public choice research on matters such as concentrated benefits and dispersed costs, voting paradoxes, agenda control, special interest lobbying, and interest group politics in general. It is enough to observe that there are many forces at work within the political process that can skew legislation away from the attainment of the common good. This is not a matter of corruption, although that may be present as well, but of institutional incentives. Even politicians of the highest integrity will often find themselves bound to favor the parochial interests of their constituents over the good of society as a whole.²¹

For good or ill, legislation is law that is produced by political forces. Describing it as law that is consciously created by the political representatives of the community should not hide the fact that legislation consists of the law that is produced by ordinary human beings with limited knowledge and virtue, functioning in the rough and tumble of real-world politics. Under some circumstances, this process can produce just law that benefits society as a whole. Under others, it can produce exploitative law designed to provide rents to some at the expense of society as a whole. Proposals to address social problems through legislation must always be judged on the basis of whether the operative political incentives make the former or the latter outcome more likely.

2. The nature of common law. Common law is case-generated law that arises from the settlement of actual disputes. The common law that forms the heart of the Anglo-American legal system originated in the customary law that evolved in post-Roman Britain. This is law that grew in the absence of any centralized coercive authority to facilitate peaceful interaction.

The customary law evolved in a perfectly natural manner. When the Romans departed Britain in the fifth century, the law and order they provided went with them. In the absence of centralized coercive authority, conflicts frequently arose that would result in violence or otherwise disrupt communal life and undermine cooperative activities. This created strong social incentives to find nonviolent, nondisruptive methods of resolving such conflicts. The members of the community responded to disruptions by pressuring disputants to voluntarily negotiate settlements and by facilitating such negotiations by acting as mediators. As certain

²¹ When retiring as Senate majority leader in 1994, George Mitchell, who left the Senate with the highest reputation for integrity, gave an exit interview to National Public Radio. To explain what made the long hours and aggravating work worthwhile, he recounted how, because of his position as majority leader, he was able to get the Clinton administration to reverse an order requiring the federal government to purchase recycled paper—presumably, a measure that would serve the common good—in order to protect the jobs of workers in paper mills in his home state of Maine. He then related how, a few weeks later, a mill worker came up to him “shaking with emotion” to tell him how much saving his job meant to him and how that moment was “indelibly imprinted on [his] mind” and was what “makes all the aggravation worthwhile.” *All Things Considered: An Exit Interview with George Mitchell* (NPR radio broadcast, October 17, 1994).

types of negotiated settlements proved successful and were repeated, the members of the community came to expect that similar disputes would be resolved similarly, and they began to base their behavior on these expectations. Eventually, a sufficient “stabilization of interactional expectancies”²² developed for the members of the community “to guide their conduct toward one another by these expectancies,”²³ and the rules of customary law were formed.

Administrative innovations of the Norman and Angevin kings spread the useful rules of the customary law throughout the realm, creating a body of common customs that formed the nucleus of the law that was applied in the king’s courts. Over the centuries, this nucleus was expanded as the king’s courts adopted useful legal devices from competing jurisdictions. For example, the law of contracts was appropriated from the ecclesiastical courts and commercial law from the customary merchant courts. This growing body of customary law recognized by the royal courts was the common law of England.

Being unwritten, the contours of the rules of common law were often unclear. When questions arose, the previous decisions were examined to determine the nature of the custom under consideration. A long line of cases decided in the same way provided a strong reason to believe that a valid rule of common law existed, and the judges of the common law courts gradually adopted the procedure of examining past cases to “prove custom.” By the eighteenth century, common law judges regularly cited past cases to identify the rules of law, and over the course of the nineteenth century, this practice gained a normative force and evolved into the doctrine of *stare decisis* that bound judges to decide present cases in conformity with past decisions—that is, to follow precedent.²⁴

Through the twentieth century, it would have been fair to characterize the common law as a body of order-producing rules that evolved without a guiding human intelligence. The rules grew in response to actual disputes that arose between members of the community. Like a plant turning to follow the sun, the rules bent and twisted as changing technological and cultural conditions altered the nature of the disputes that arose. Yet, despite the lack of a guiding intelligence, the common law learned. When cases yielded rules that did not produce social harmony, interpersonal

²² Lon L. Fuller, “Human Interaction and the Law,” in *The Principles of Social Order: Selected Essays of Lon L. Fuller* (Durham, NC: Duke University Press, 1981), 219.

²³ Ibid., 220.

²⁴ Few theorists appreciate just how recent the advent of *stare decisis* is. “Although most modern lawyers and scholars conceive of the doctrine of *stare decisis* as a formative element of the common law, this is an ahistorical understanding of the development of the common law. The doctrine of *stare decisis*, the idea that the holding of a particular case is treated as binding upon courts deciding later similar cases, is a late nineteenth-century development and represents a clear doctrinal and conceptual break with the prior history of the common law.” Todd Zywicki, “The Rise and Fall of Efficiency in the Common Law: A Supply-Side Analysis,” *Northwestern University Law Review* 97 (2003): 1584–87 (footnotes omitted).

disputes continued to arise, causing the issue to be relitigated. Eventually, alternative resolutions were tried. If they were no better, the process repeated itself. When a resolution that facilitated cooperative interaction was found, conflicts subsided and the rule persisted. Through this trial-and-error process, the common law discovered rules that tended to promote peaceful and productive social interaction.²⁵

It is true that over the course of the past century, the common law has begun to depart from this model. Appellate judges now frequently decide novel cases—what lawyers call cases of first impression—with an eye toward how the rule they announce will function prospectively, rather than strictly on the basis of how it can be assimilated into the body of existing law. In this sense, the contemporary common law has become somewhat more “legislative” in nature. Nevertheless, even today, common law rules grow out of the resolution of actual disputes, and the common law retains its trial-and-error learning mechanism since rules that do not effectively facilitate social cooperation continue to generate more litigation, and hence more opportunity for change, than those that do. Thus, when assessing the adequacy of common law as a mechanism for addressing social problems, one must always keep in mind its tendency toward self-correction.

B. Common law as a privatization mechanism

Common law, in the broad sense in which the term is being used in this essay, is a mechanism by which human beings privatize commons. The rules of customary and common law arise from the process of settling actual disputes among the members of society. These rules are responses to the types of activities that bring human beings into conflict in the contemporary social environment. The conflicts engender efforts to resolve them in ways that restore peaceful interaction; the trial-and-error process of the common law discovers rules that do this successfully. When the conflicts arise from activities that overexploit a commonly held resource, the rules that result usually align individual incentives with the mutually beneficial use of the resource—that is, they privatize the resource.

Under the proper conditions, resources held in common may be used by the members of a community with little or no conflict. As long as human exploitation of a commonly held resource remains below the resource’s carrying capacity, individuals may use as much of the resource as they wish without destroying others’ ability to do the same. In such circumstances, conflicts over the use of the resource do not develop, and, hence, neither do common law rules. The resource remains a commons.

²⁵ For a more detailed account of the developmental history of the common law, see John Hasnas, “Hayek, the Common Law, and Fluid Drive,” *New York University Journal of Law and Liberty* 1, no. 1 (2005): 81–98.

However, when human activity approaches the carrying capacity of commonly held resources, conflicts develop over their use. As the grass in Hardin's pasture becomes relatively scarce, different herdsmen will want to graze at the same location at the same time. In very primitive circumstances, such conflicts can give rise to violence. But resolving conflicts through violence tends to be expensive and highly disruptive to the life of the community in which it occurs. Hence, the violence itself produces an incentive to find alternative, more peaceful means of conflict resolution. In more civilized circumstances in which such alternatives have been found, the conflicts typically produce efforts at negotiated settlements that evolve into the practices that comprise the customary law. In relatively modern circumstances, they produce lawsuits heard before third-party decision-makers, the results of which are abstracted into the rules of common law. The rules specify how parties are permitted to act, creating entitlements that we call property rights.

In a society of hunter-gatherers, land would be held in common. In wandering across the countryside in search of game, fruit, and vegetables, the members of the community would have no reason to dispute over the possession of a particular piece of ground. With no conflict to resolve, no rules of common law would evolve and the land would remain a commons. Should the community begin agricultural cultivation, the situation would change. Individuals who invest time and effort into planting would not take kindly to others who appropriate the crop that springs from their work. Because some portions of land are more fertile than others, different individuals will want to cultivate the same portions. The conflicts that result will have to be resolved, and the rules that result from these resolutions will almost assuredly create a mechanism by which individuals can exclude others from interfering with their use of the land. When this mechanism takes effect, the commons in land will be privatized.²⁶

The economist Harold Demsetz supplies what has become the classic example of this process with his description of the evolution of property rights among the Native American peoples of the Labrador Peninsula.²⁷ Before the fur trade brought by the Europeans, the members of the indigenous tribes treated the land on which they hunted as a commons. In hunting fur-bearing animals to supply themselves with food and furs, they did not approach the land's carrying capacity for such species. All hunters could satisfy their needs without undermining other hunters' ability to do the same. Hence, no conflicts developed. With the advent of

²⁶ For another account of the relationship between conflict and the evolution of solutions to the tragedy of the commons, see Bonnie J. McCay, "Emergence of Institutions for the Commons: Contexts, Situations, and Events," in Elinor Ostrom et al., eds., *The Drama of the Commons* (Washington, DC: National Academy Press, 2002), 370–72.

²⁷ Harold Demsetz, "Toward a Theory of Property Rights," *American Economic Review* 57 (1967): 347.

the fur trade, the number of animals being hunted increased dramatically, approaching the carrying capacity of the land. The scarcity of game brought hunters into conflict, which was resolved by adopting the custom of blazing the trees with their crests to mark off individual hunting territories. The recognition and enforcement of this custom removed the fur-bearing game from the commons, effectively privatizing it.

To the extent that private property reduces the incidence of social conflict, the common law is an engine of its creation. Independently of any consideration of real property, almost all of what we call intangible property arose through the common law process. Commercial instruments such as promissory notes, bills of lading, bills of exchange, stocks, and bonds all emerged from the Law Merchant—the customary commercial law that arose out of the settlement of actual disputes by medieval merchants.²⁸ Similarly, intellectual property such as trademarks, trade secrets, and copyright are all products of the common law. The same creative process is currently at work producing private rights in cyberspace.²⁹

However, the property rights that evolve through the common law process are not the idealized, conceptually pristine rights to individual exclusive use and control that philosophers like to discuss. Rather, they are a subtle, nuanced bundle of rights that extend only as far as necessary to facilitate peaceful social interaction. Demsetz's own example provides an interesting illustration of this. In offering anthropological evidence of Native American practices, Demsetz quotes a source that includes the observation that hunters were free to enter others' privatized territories to hunt for meat as long as they left the fur and tail behind for the territory's "owner."³⁰ Because it was the animals' fur that had increased in value, disputes arose over the possession of the pelt, rather than the animal itself. Hence, the solution that evolved privatized the pelts, but not the meat, which was all that was necessary to prevent conflict.

Common law property rights generally reflect this. The essential element of the right to property is the right to exclude others. Yet one may not convey an enclosed estate to another and then exclude the owner from crossing one's property to access that estate.³¹ It is not difficult to see why the common law would carve out such an exception to the right to control one's property, since a contrary rule that permitted an owner to convey land to another and then deprive him or her of the ability to use it would invite, rather than reduce, conflict.

²⁸ See Harold J. Berman, *Law and Revolution* (Cambridge, MA: Harvard University Press, 1983), 349–50.

²⁹ See Bruce Benson, "The Spontaneous Evolution of Cyber Law: Norms, Property Rights, Contracting, Dispute Resolution, and Enforcement without the State," *Journal of Law, Economics, and Policy* 1 (2005): 269–348.

³⁰ Demsetz, "Toward a Theory of Property Rights," 352.

³¹ See Restatement (Third) of Property, sec. 2.15 (2000). This rule "can be traced back in the common law at least as far as the 13th century." *Ibid.*, comment 1.

Similarly, the common law doctrine of adverse possession is at odds with the idealized conception of property. Adverse possession allows one to acquire ownership of another's property by making open and notorious use of it for a prescribed period of time if the owner takes no action to stop the usage.³² To the philosopher, it may seem unjust that an interloper may acquire good title to another's property merely by making continuous unauthorized use of it. But the common law evolves in ways designed to reduce conflicts, not to effect perfect justice. One who makes open and notorious use of property sends a message to the public that he or she has title to the property. An owner who takes no action to contradict that message invites the public to deal with the interloper as though he or she held title—an invitation that sows the seeds of future conflict. The common law rules of property evolved a duty for owners to prevent misleading messages about who holds title because such a duty reduces the potential for disputes.³³

Hence, the common law does not produce conceptually perfect property rights; it merely produces the degree of privatization necessary to channel human interaction away from conflict and toward cooperation. However, that degree of privatization is often all that is needed to escape the tragedy of the commons. A good illustration of this is provided by the medieval open field system of agriculture, in which the common law process produced an amalgam of individual rights and group control. Rural villages were usually organized around two or three large common fields bordered by hedges or fences. Large-scale decisions regarding the management of these fields, such as what to plant, which portion to leave fallow, etc., were made collectively by the group. But individuals had private rights to harvest the crops on various noncontiguous strips scattered throughout the fields, as well as other private rights to use the common field.³⁴ This produced fields that have been described as "marble cake[s] of group and individual property rights."³⁵ Yet this semiprivate

³² Edward H. Rabin et al., *Fundamentals of Modern Property Law*, 4th ed. (Westbury, NY: Foundation Press, 2000), 789.

³³ Carol Rose makes this point by stating that property owners have a duty to "make and keep their communications clear" because "clear titles facilitate trade and minimize resource-wasting conflict. If I am careless about who comes on to a corner of my property, I invite others to make mistakes and to waste their labor on improvements to what I have allowed them to think is theirs. I thus invite a free-for-all over my ambiguously held claims, and I encourage contention, insecurity, and litigation—all of which waste everyone's time and energy and may result in overuse or underuse of resources. But if I keep my property claims clear, others will know that they should deal with me directly if they want to use my property. We can bargain rather than fight; through trade, all items will come to rest in the hands of those who value them most." Carol Rose, "Possession as the Origin of Property," *University of Chicago Law Review* 52 (1985): 81–83.

³⁴ For a good account of the private "common rights" that evolved at customary and common law, see Jane Buck Cox, "No Tragedy of the Commons," *Environmental Ethics* 7 (1985): 53–55.

³⁵ Robert C. Ellickson, "Property in Land," *Yale Law Journal* 102 (1993): 1388.

marble cake was sufficient to properly align individual incentives with the preservation of the resource.³⁶

Indeed, in some circumstances, common law privatization does not produce individualized property rights at all. Sometimes, all that is necessary to align incentives is a set of rules governing the resource's use that provides benefits to all members of the relevant group. In cases in which a group that is exploiting a resource is capable of self-management, the common law may produce group, rather than individual, property rights. Specifically, under circumstances in which "the administrative costs of customary management are low relative to those of an individual property system,"³⁷ the common law process tends to produce a managed commons rather than individual entitlements.³⁸ Thus, the common law produced not fully privatized avenues of transportation, but "roads and waterways [that] were 'managed commons,' where customary practices ameliorated congestion and external harms, and where alternative property regimes might not have been worth the expense, so long as the country was relatively undeveloped."³⁹

Carol Rose provides an interesting illustration of the subtlety of the common law process of privatization with her account of the development of water rights during the nineteenth century.⁴⁰ She notes that although the value of river water increased in England and the United States, the reasons for its increase in England and the eastern United States were different from the reasons for its increase in the western United States. In England and the eastern United States, the main value of the water was as a source of power, which, with the advent of the industrial revolution, was in increasing demand. This use did not decrease

³⁶ Robert Ellickson writes: "Most economic historians regard the open-field system as an efficient institution during its prime in the high Middle Ages. Medieval farmers, recognizing that efficient boundary locations varied, devised a clever way to change land boundaries on a seasonal basis. The agricultural activities for which there were efficiencies of scale—harvesting, fencing, shepherding—were performed jointly on commonly accessible land according to explicit bylaw or implicit contract ('the custom of the manor'). The small agricultural events that lacked returns to scale—planting, weeding, thinning—were stimulated through the direct material incentives of private land ownership." *Ibid.*, 1391.

³⁷ Carol Rose, "The Comedy of the Commons: Custom, Commerce, and Inherently Public Property," *University of Chicago Law Review* 53 (1986): 744.

³⁸ Carol Rose notes that many theorists believe that there is a "natural history of property rights when resources are growing scarcer: a stage 1 of plenty, where any given resource is unowned, unmanaged, and open to all; a stage 2, where the resource is less plentiful and is appropriated by a group and subjected to somewhat diffuse common-property arrangements, often customary; and a final stage 3, in which the resource is scarce enough to be subject to full-blown individualized property rights." Carol Rose, "Energy and Efficiency in the Realignment of Common Law Water Rights," in Carol Rose, *Property and Persuasion* (Boulder, CO: Westview Press, 1994), 164. Rose points out, however, that property rights do not necessarily evolve in this order, arguing persuasively that the process can stop at stage 2, and that stage 2 and stage 3 can often be reversed. Her point, which I believe to be correct, is that common law evolution tends to find the most apt solution in the particular circumstances, whether this fits scholars' theoretical models or not.

³⁹ Rose, "The Comedy of the Commons," 745.

⁴⁰ See Rose, "Energy and Efficiency," 163.

the amount of water in a river, but did affect its flow. In the western United States, the main value of the water came from its use in mining operations and for irrigation, the demand for which was increasing with rising population. These uses extracted water from the river, decreasing its amount.

The common law rules that evolved in England and the eastern United States only partially privatized the water. Riparian owners received only the right to prevent unreasonable uses of the water—uses that would destroy its value to downstream users by obstructing its flow. Otherwise the river remained an open commons. But this level of privatization was all that was required to preserve the value of the resource, which was its flow. In contrast, the rules that evolved in the western United States fully privatized water by recognizing individual, tradable rights to it.⁴¹ In the west, full privatization was necessary to internalize the social cost of appropriating river water in order to prevent it from being totally consumed. Although the common law process produced different rules in different locations, the rules that evolved provided precisely the degree of privatization necessary to avoid the tragedy of the commons.

In sum, the common law privatizes commons not by erecting fences around resources, but by aligning the incentives of individuals with the resources' preservation. It is not unreasonable to think of the common law process as a legal version of Adam Smith's invisible hand. It erects a structure of rules within which individuals pursuing their own interests also advance the general good.

C. Legislation as a mechanism for restricting access

Because it is intentionally created, legislation can be used in a variety of ways. With regard to matters that impact the environment, legislation may be used to preserve commons, to "commonize" private property, to restrict access to commons, and in some cases to privatize commons. However, generally speaking, legislation is a mechanism by which human beings preserve and restrict access to the commons.

Governments regularly use legislation to preserve commons. State and federal parks are examples of land that is maintained as commons by legislative action. From the point of view of the nonindigenous Americans living east of the Mississippi in the early nineteenth century, the land encompassed by the Louisiana Purchase constituted a commons. The federal government set the terms under which this land could be reduced to private ownership, but in so doing legislatively designated large portions of it to be preserved as commonly held public land. A large per-

⁴¹ For a fuller account of the development of water rights in the western United States, see Terry Anderson and P. J. Hill, "The Evolution of Property Rights: A Study of the American West," *Journal of Law and Economics* 18, no. 1 (1975): 177–78.

centage of the western United States still consists of such public land. Similarly, legislation guarantees that the lands under the coastal waters of the United States are preserved as commons shared by the state and federal governments.⁴²

Having preserved a commons in land, government then protects it against overexploitation by restricting access to it. State and federal legislation⁴³ determines the nature of the use that can be made of public land and the conditions under which individuals may undertake such use. Legislation banning snowmobiles and dune buggies from national parks and oil drilling in the Arctic National Wildlife Refuge serve as good examples of managing the commons by legislatively restricting access to it.

The electromagnetic spectrum is a commons. With the advent of radio and the demands placed on the spectrum by the increasing number of broadcasters, it became a commons that was approaching its carrying capacity. Congress addressed this by passing the Radio Act of 1927, which ensured that the spectrum remained a commons by prohibiting private ownership of broadcast channels, and required a federal license to broadcast.⁴⁴ By limiting the number of licenses issued and the use rights granted by each license, the legislation was designed to preserve the value of the commonly held spectrum by restricting access to it.

The rivers and other waters of the United States, which were partially privatized by the common law, remained a commons with respect to the introduction of pollutants that did not obstruct the water's flow. As the amount of pollutants discharged into these waters increased over the course of the twentieth century, they began to undermine the value of the water as a resource—that is, they began to approach the water's carrying capacity. Congress responded with the Clean Water Acts that set limits on the types and amounts of pollutants that may be discharged into the navigable waters of the United States—a clear example of managing a commons by restricting access. Similarly, the atmosphere over the United States is a common resource that was being damaged by its overexploitation as a waste-disposal medium. Congress addressed this by legislatively restricting access to the atmosphere in the Clean Air Acts.

In addition to preserving resources as commons, legislation is often used to "commonize" private property. The most obvious example of this is when government exercises the power of eminent domain to take private property for a public use—for example, condemning private property to build an open-access roadway. However, legislative commonization is not always so direct.

⁴² See Submerged Lands Act of 1953, 43 U.S.C.A. secs. 1301–1315 (West 2007).

⁴³ For purposes of concision, the term 'legislation' is being used to encompass regulations issued by administrative agencies.

⁴⁴ Radio Act of 1927, 47 U.S.C.A. sec. 83 et seq., repealed by ch. 652, sec. 602(a), 48 Stat. 1102 (West 2007).

Whenever legislation transfers the management of property from private to public hands, it essentially returns the property to the commons. For example, the Clean Water Act gives the Army Corps of Engineers the power to prevent dredging, filling, or building on wetlands, which are defined as lands that are saturated by surface or ground water frequently enough to support vegetation adapted for life in saturated soil conditions.⁴⁵ When the Corps finds that private property includes a wetland, it can prevent the owner from making any productive use of that portion of his or her property. By removing the owner's right to control the property, the legislation effectively commonizes it, simultaneously restricting access to it as a means of preventing its destruction.

A similar example of legislative commonization is supplied by the Endangered Species Act.⁴⁶ When a plant or animal is placed on the endangered species list, any alteration to its habitat that may threaten its survival is prohibited. When endangered species are found on private property, the law prohibits the owner from altering his or her land, once again passing control of the property from private to public hands. By preventing the private owner from managing the property and restricting access to it, the law has again effectively commonized the property.

Legislation may also be crafted to simultaneously restrict access and partially privatize a commons. For example, cap-and-trade environmental legislation establishes an upper limit or cap on the amount of a pollutant that may be discharged into a commons and creates and distributes tradable permits to discharge specified amounts of the pollutant, the total of which is equal to the cap. The legislation also bars anyone from discharging the pollutant into the commons without such a permit. Those who wish to discharge the pollutant must now pay for the right to do so. Those who reduce the amounts they discharge below the level allowed by the permits they hold may sell their unused allotment to others, reaping rewards from their reduction in pollution. The cap restricts access to the commons; the ability to buy and sell pollution permits aligns the incentives of individuals with the reduction of pollution, privatizing the commons with respect to the discharge of the regulated pollutant.

Finally, legislation can privatize commonly held property. The Homestead Act of 1862, which allowed citizens to gain ownership of public land by working on it for five years, is probably the preeminent example of this type of legislation. However, any legislation that auctions off commonly held resources, such as the contemporary FCC auction of wireless airwaves, has this character. Thus, legislation could be employed to address environmental problems by privatizing the commons. However, there are very few examples of such legislation. Although in recent years there has been a greater utilization of the hybrid cap-and-trade legislation, it is

⁴⁵ See Definition of Waters of the United States, 40 C.F.R. 230.3 (2006).

⁴⁶ 16 U.S.C. secs. 1531–1544 (2007).

nevertheless the case that environmental legislation is almost always designed to preserve the commons by restricting access to it.

D. The comparative assessment, or Why doing nothing is doing something

Anglo-American law provides two distinct models of environmental regulation: the common law model of privatization that aligns individual incentives with the preservation of the resource, and the legislative model that preserves the commons by punishing individuals who overexploit the resource. Therefore, the market failure argument recounted above requires a comparative analysis of the two models to decide which measures are most appropriate for the protection of various environmental resources. Such comparative analyses rarely take place, however. Why?

When a threat to an important environmental resource is identified, there is a virtually irresistible desire to do something about it. But the common law model of regulation is a decentralized, evolutionary model. The rules evolve in response to actual conflicts through a process of trial and error. This implies that the rules do not evolve until the problem is acute enough to give rise to conflicts. Although the common law process typically produces practical, effective rules that have been informed by human experience, it does not produce them right away. As a result, there can be a considerable delay between the initial recognition of an environmental problem and the development of the common law regulation that addresses it. Further, the rules that arise through the common law process are not crafted by any identifiable guiding intelligence. They evolve. They are not created. Hence, no particular human being is acting directly to solve the problem. For these reasons, allowing the common law regulatory process to work can appear to be doing nothing.

From the perspective of those concerned about protecting the environment, however, doing nothing is not an option. Without a good understanding of the evolutionary mechanism of the common law, it is natural to assume that doing something means doing something *intentionally*. And in the legal context, doing something intentionally means enacting legislation. Comparative analyses of the common law and legislative approaches to environmental regulation are rarely made because the common law approach is frequently associated with simply failing to address the problem.

This is unfortunate because there are many situations in which common law regulation is likely to be the more effective approach. To employ a sports analogy, addressing environmental problems can be like playing defense in soccer. When confronted with an attacking player, a defender must decide whether to attempt to tackle the ball away or to maintain his or her position between the attacker and the goal. Under certain circumstances, such as when the attacker is going in on a breakaway, the right play is to attempt the tackle. In most situations, however, the proper play

is for the defender to maintain his or her position, doing no more than impeding the attacker's progress and creating time for his or her teammates to get into an effective defensive alignment. This type of play requires great patience and self-control by the defender, who must resist the temptation to "do something" by tackling the ball. Although a successful tackle would stop the attack, an unsuccessful tackle could spell disaster by allowing the attacker a clear shot at the goal. When playing properly, a defender may appear to be standing still, but he or she is not doing nothing. The defender is creating time for a dynamic defensive system to adjust to a threat. Similarly, in the context of environmental regulation, those who have the patience and self-control necessary to resist the temptation to immediately pass laws restricting access to a common resource may appear to be standing still legislatively, but they are not doing nothing. They are creating time for the dynamic common law regulatory system to adjust to a new environmental threat.

Two of the most potent common law weapons against pollution are the torts of trespass and nuisance. One is liable for trespass whenever one intentionally causes something to enter another's land,⁴⁷ and for nuisance whenever one interferes with the private use and enjoyment of another's land.⁴⁸ To the extent that one exploits the commons in air, rivers, or other bodies of water in ways that one knows will either deposit pollutants on another's land or negatively impact the value of that land, one may be sued for trespass or nuisance. Such liability judgments shift the cost of the polluting activity back onto the polluter, thereby internalizing the social cost of exploiting the commons, effectively privatizing it.⁴⁹ Such lawsuits have been used to curtail the dumping of sewage and industrial waste into rivers⁵⁰ and the air.⁵¹ To what extent can such privatization via lawsuit replace legislation designed to restrict access?

Acid rain damages forests, buildings, and the aquatic life in lakes and streams. It is caused by industrial activity that releases sulfur dioxide and nitrogen oxides into the atmosphere. The federal government addressed this problem legislatively in the 1990 Clean Air Act Amendments⁵² by

⁴⁷ See Restatement (Second) of Torts, sec. 158 (2000).

⁴⁸ See Restatement (Second) of Torts, sec. 821D (2000).

⁴⁹ When a polluter exploits a commons in a way likely to cause an unreasonable level of harm to the land of another, the landowner may obtain an injunction to terminate the activity. See W. Page Keeton et al., *Prosser and Keeton on Torts*, 5th ed. (St. Paul, MN: West Publishing Company, 1984), 631.

⁵⁰ See, e.g., *Sammons v. City of Gloversville*, 175 N.Y. 346 (1903); *Whalen v. Union Bag and Paper Co.*, 208 N.Y. 1 (1913).

⁵¹ See, e.g., *Boomer v. Atlantic Cement Co.*, 257 N.E. 2d 870 (1970). It has been suggested that the continued development of such common law environmental causes of action could provide most of the environmental protection now afforded by federal environmental law. See H. Marlow Green, "Common Law, Property Rights, and the Environment: A Comparative Analysis of Historical Developments in the United States and England and a Model for the Future," *Cornell International Law Journal* 30 (1997): 541.

⁵² Pub. L. No. 101-549, 104 Stat. 2399 (1990).

directly limiting emissions of nitrogen oxides and adopting a cap-and-trade program for the emission of sulfur dioxide. By all accounts, this approach has been quite effective, achieving the required reductions in emissions at lower than anticipated costs. Could the same or more reductions have been accomplished through common law trespass or nuisance suits?⁵³ Would such suits have been a more or less costly way of addressing the acid rain problem? We don't know because no comparative analysis of the alternative approaches has been done. Waiting for the common law solution was seen as doing nothing, rather than as creating time for a mechanism for internalizing social costs on the basis of actual experience to operate.

Tort reform is currently a high-profile political issue. A broad coalition of business and intellectual interests is actively lobbying Congress and the state legislatures to pass legislation curtailing the ability of plaintiffs to recover damage judgments. Tort reform advocates typically accuse plaintiffs' attorneys of employing creative and expansive interpretations of the common law to undemocratically overregulate the business environment in ways that have never been approved by voters. They claim that liberal discovery rules and low evidentiary thresholds for establishing a cause of action, coupled with the availability of class action lawsuits, joint and several liability, and punitive damages, force businesses to bear too large a share of the cost of protecting the public against injury. But, of course, plaintiffs' attorneys are just as clever and creative when the injury

⁵³ What would such lawsuits look like? How can there be a lawsuit when those whose property has been damaged do not know which polluter to hold responsible? But the common law has encountered this problem before and has already evolved a response to it: market share liability. In cases in which the plaintiff has been damaged by a product produced by several manufacturers, but cannot identify the particular manufacturer who caused his or her injury, the plaintiff may join all available manufacturers as defendants. As long as the defendants constitute a substantial share of the market for the offending product, the plaintiff can recover damages from each defendant in proportion to the defendant's share of the market for the product at the relevant time. See *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588 (1980).

What if an individual property owner's damage is too slight to make it worthwhile to pursue a law suit? But the common law has encountered this problem before and has already evolved a response to it: the class action lawsuit that allows the joinder of many small claims of damage presenting essentially the same factual issues into one suit.

Won't polluters merely regard lawsuits as a cost of doing business to be absorbed, and continue with their polluting activities? Perhaps, but the common law has encountered this problem before and has already evolved a response to it: the injunction. In trespass and nuisance suits, a plaintiff can sue not merely for damages, but for an injunction that orders the defendant to refrain from the activity that is causing the plaintiff's injury.

The essential characteristic of the common law is that it learns. At any point in time, there are interpersonal wrongs that it does not adequately address. But it is precisely these inadequacies that spur the legal innovations that produce new procedures and remedies. I can describe how the common law would be likely to handle lawsuits over acid rain because the problems that beset such suits are similar to those that have arisen and been resolved in the past. I cannot, however, predict how the common law will address novel environmental problems that present entirely new challenges. This is precisely the reason for advocating common law environmental regulation: to learn how to align private incentives with the preservation of resources that are not easily reduced to physical possession.

is due to pollution as they are when it is due to defective products. There is every reason to believe that they will seek ways to adapt the law of trespass and nuisance to emerging environmental threats. If the tort reform advocates are correct, and if the problem with the contemporary tort system is that it is too highly regulative, refraining from legislative efforts to solve environmental problems in order to allow this system to operate can hardly be regarded as doing nothing.

In this essay, I am arguing only that with regard to any particular environmental issue, proper public policy analysis requires a comparative assessment of the efficacy of common law privatization and legislative restriction of access. I nevertheless believe that such assessments will usually favor the common law approach over the legislative one. This is because of both the incentives inherent in each approach and the mechanism by which each creates regulations.

Common law privatization functions by changing the incentive structure so that it is in individuals' self-interest to act in ways that preserve the relevant environmental resource. This minimizes problems of enforcement. Because individuals benefit from behaving responsibly, common law solutions tend to be self-enforcing. Furthermore, because the rules that align the incentives grow out of the settlement of real-world disputes, they are informed by the way human beings actually behave. Hence, the rules are rarely undermined by the type of unanticipated consequences that beset theoretically constructed solutions. Finally, the self-correcting nature of the common law process renders it flexible enough to adapt to any such unanticipated consequences or changes in conditions that tend to subvert the efficacy of the rules. To the extent that the rules do not properly align individual incentives, the resulting conflicts give rise to increased litigation, which abates only when a more effective set of rules is found.

In contrast, legislatively restricting access to common resources leaves the incentive to overexploit the resource intact and attempts to punish those who respond to it. In this situation, individuals can always benefit from undetected cheating, which creates considerable enforcement problems—a fact evidenced by the Environmental Protection Agency's employment of armed agents in its Criminal Investigation Division.⁵⁴ Further, this state of affairs also creates a powerful incentive for individuals to engage in rent-seeking—the expenditure of resources to influence legislators or regulators to draw up the rules restricting access in ways that favor the rent-seekers' interests over those of their competitors or the common good. Thus, regulations under the Clean Air Act Amendments of 1970 were written to require the installation of scrubbers in the smokestacks of coal-burning power plants rather than to establish maximum ambient levels for pollutants (even though requir-

⁵⁴ See *United States v. Knott*, 106 F. Supp. 2d 174, 180 (D. Mass. 2000).

ing scrubbers had greater costs and left the air dirtier) in order to protect the interests of coal miners in West Virginia, which was represented by Robert Byrd, one of the most powerful United States senators. Requiring the air to be cleaned *after* the coal was burned neutralized the economic advantages of the cleaner-burning coal mined in the western United States over the dirty-burning coal mined in West Virginia.⁵⁵ Finally, because legislation is abstract in nature and formed in response to political influences rather than the practical demands of human interaction, it frequently produces counterproductive unanticipated consequences. Perhaps the preeminent contemporary illustration of this is the recent global food crisis that was due, in part, to legislative mandates for the use of biofuels in the United States and several other countries, despite the fact that the production of ethanol is environmentally more damaging than burning fossil fuels.⁵⁶

The common law also provides a flexible and adaptive method of creating environmental regulations. As the technological and social conditions of life in society change in ways that give rise to new sources of conflict, the trial-and-error process of common law evolution creates a feedback loop that helps human beings learn what rules most effectively resolve such conflicts. As such, the common law functions as a discovery process. This is extremely important when dealing with emerging threats to environmental resources that are not easily privatized, such as air, water, endangered species, biodiversity, the ozone layer, and perhaps even climate stability. Through trial and error based on real-world experience, the common law learns what most effectively aligns the incentives of various human actors. Thus, it teaches us how best to privatize resources that cannot be reduced to physical possession. How else could we learn that riparian rights were the proper way to privatize rivers in England and the eastern United States, but that tradable water rights were needed in the western United States?

In contrast, legislation tends to be a rather rigid, all-eggs-in-one-basket method of creating environmental regulations, and one that is quite opaque to feedback. Given the nature of the political process, it can be crucially important to get the legislation restricting access to the commons right on the first try. This is because, once enacted, such legislation tends to become entrenched as the groups that benefit from it resist change. For example,

⁵⁵ See Iain McLean, *Public Choice: An Introduction* (Oxford and New York: Basil Blackwell, 1987), 71–76.

⁵⁶ The *Washington Post* reports that “a study published in Science magazine Feb. 29 concluded that greenhouse-gas emissions from corn and even cellulosic ethanol ‘exceed or match those from fossil fuels and therefore produce no greenhouse benefits.’ By encouraging an expansion of acreage, the study added, the use of U.S. cropland for ethanol could make climate conditions dramatically worse. And the runoff from increased use of fertilizers on expanded acreage would compound damage to waterways all the way to the Gulf of Mexico.” Steven Mufson, “Siphoning Off Corn to Fuel Our Cars,” *Washington Post*, April 30, 2008, at A8.

it is likely to be quite difficult to change the requirement of smokestack scrubbers in coal-burning power plants as long as Robert Byrd remains a powerful senator. Hence, legislation restricting access to the commons frequently cannot be changed without considerable political struggle, regardless of its effectiveness. Yet because legislation necessarily consists of rules that have run the gauntlet of special interest lobbying, political logrolling, and partisan compromising, there is reason to doubt whether its initial configuration will represent the most effective way of protecting the environment. In addition, because legislation supplants the common law, employing it to restrict access to the commons terminates the common law learning process. Thus, in opting for legislative rather than common law solutions to environmental problems, we are abandoning our opportunity to learn from experience, and betting our environmental future on the suitability of abstract rules generated by an explicitly political process. We are also abandoning a self-correcting regulatory mechanism for one that can be changed only through political struggle.

These considerations lead me to believe that the legislative approach will be preferable to the common law approach only where it is impossible to align incentives, or in emergency situations in which the time lag associated with common law privatization is intolerable and there is reason to believe the legislative process could react more rapidly. To return to the soccer analogy, legislation is likely to be the superior option only in situations comparable to an attacker going in on a breakaway or when time is running out in the game. Ordinarily, however, giving the common law time to teach us how to privatize a common resource will be a more effective way of preserving it than utilizing the political process to legislatively restrict access to it. In most cases, doing nothing *legislatively* is doing something very significant indeed.

E. How one woman saved the sea horse, or How to do something while doing nothing

In support of my contention that common law privatization will usually be a better approach to environmental problems than legislatively restricting access, consider the following illustrative example.⁵⁷

The sea horse, once plentiful, has recently come under threat of extinction. Many people in China believe the sea horse to have beneficial medicinal and aphrodisiac properties. With China's recent economic liberalization and greater participation in world trade, demand for sea horses sharply increased. As a result, the global supply of sea horses is falling precipitously.

Prior to the 1980s, the waters off the coast of the Philippines were plentifully stocked with sea horses. The Philippine sea horse fishery was

⁵⁷ The information on which this illustration is based is taken from the PBS science show *Nova: The Kingdom of the Seahorse*, broadcast on April 15, 1997.

a commons that all sea horse fishermen were free to exploit. However, as Philippine fishermen increased the number of sea horses they caught to meet the increased demand from China, the take began to approach the carrying capacity of the fishery.

Handumon is a village in one of the most impoverished regions of the Philippines. For much of its population, the sale of sea horses constituted the only source of income beyond subsistence fishing. By the mid-1990s, the population of sea horses in these waters was rapidly declining. One reason for this was the harvesting of pregnant sea horses, each of whom carried large numbers of young, before they could give birth. No fisherman was willing to forgo harvesting pregnant sea horses because doing so merely meant that another fisherman would take the sea horse and the first would have relinquished an immediate benefit for no resulting gain, a clear example of the tragedy of the commons at work.

At this time, Amanda Vincent, a marine biologist concerned about the preservation of the sea horse, came to Handumon. After living in the community for a while and observing their practices, she showed the local fishermen how to construct netting with mesh small enough to contain adult sea horses, but large enough to allow newly born fish to escape to the open sea. Armed with this knowledge, the fishermen built personal floating cages in which they placed any pregnant sea horses that they found. They then allowed the sea horses to give birth before removing them from the water for sale. Similarly to the Native Americans in Demsetz's account, the custom evolved of treating the cages as private property acquired by the labor invested to gain possession of the fish they contained.

Encouraged by this experience, the fishermen agreed to one of Vincent's suggestions to place a portion of the reef near their village off-limits to all fishing in an attempt to increase the sea horse population in the surrounding waters. In effect, they created a commons informally managed by the community, with individual members of the community having the right to take a share of the surplus it generated.⁵⁸ This practice was successful at further increasing the local sea horse population.

This situation was stable until word of the increased population of sea horses near Handumon spread up and down the Philippine coast, causing fishermen from surrounding islands and villages to begin to "poach" sea horses from Handumon's preserve. In response, the Handumon villagers began patrolling the waters around the preserve to keep the poachers out. In addition, to further increase the security of the resource and its yield, the Handumon fishermen, with Vincent's help, began to organize fully privatized sea horse farms.

⁵⁸ This arrangement has much in common with the medieval common field system of agriculture and is a good example of Carol Rose's second stage in the evolution of private property, in which "the resource is less plentiful and is appropriated by a group and subjected to somewhat diffuse common-property arrangements, often customary." Rose, "Energy and Efficiency," 164. See note 38 above.

Eventually, fishermen from surrounding areas came to Handumon to learn what the villagers were doing and copied their techniques. As a result, the sea horse population of the entire region is rapidly recovering.

In my opinion, this story provides an interesting modern-day illustration of the customary/common law process of privatization at work. Note, however, that it is not a tale of the purely spontaneous evolution of property rights, as Demsetz's account of the native peoples of the Labrador Peninsula purports to be. Amanda Vincent, who played a significant role in the process, was an outsider who came to Handumon because of her desire to save the sea horse. But she came as a researcher, not a regulator. As her account of the Handumon project makes clear, to advance her goal, she had to enter into the life of the community, earn the trust of the fishermen, and learn through a process of trial and error how best to align the interests of the fishermen with the preservation of the species. As one who invested her own time, effort, and resources into a speculative project to realize the environmental value of species preservation, it would be fair to call Amanda Vincent an environmental entrepreneur.

The presence of such an entrepreneur does not mean that the common law process is not at work. Even in the most primitive systems, there always must be individuals who first advance the ideas that gain customary acceptance. In a sense, every plaintiff's attorney working on a contingency fee who argues for a novel interpretation of the common law is operating as an entrepreneur. Saying that the common law process does not involve intentional lawmaking does not imply that it involves no intentional action by *individuals*. It involves constant intentional action by individuals trying to solve social problems. Its distinguishing feature is the open-ended, trial-and-error feedback mechanism it employs to select among these intentionally crafted solutions. Common law privatization requires that we do nothing collectively through legislation, not that we do nothing individually.

Contrast the Handumon project with the effort to protect endangered species by maintaining them as a common resource and legislatively restricting access to them. Examples of this approach are embodied in the Endangered Species Act (ESA) in the United States and the worldwide Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The ESA radically restricts access to endangered species. Under the act, once a species has been declared endangered, any effort to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any member of that species is prohibited.⁵⁹ Further, one harms an endangered species whenever one modifies its habitat in a way that impairs the animals' "essential behavioral patterns, including breeding, feeding, or sheltering."⁶⁰ CITES indirectly restricts access to endangered species

⁵⁹ 16 U.S.C. sec. 1532(19).

⁶⁰ 50 C.F.R. sec. 17.3 (1994).

by banning international trade in protected animals and their by-products. Both the ESA and CITES attempt to preserve endangered species by protecting each and every member of such species. Under both, actions like those undertaken by the Handumon fishermen that involved killing and selling individual animals would be blatantly illegal.

In contrast to the Handumon situation, which was marked by an increasing degree of voluntary cooperation, the legislative approach is beset with significant enforcement problems. For example, the ban on trade in ivory from the tusks of African elephants caused the price of ivory to skyrocket. This created such strong incentives for poachers to kill protected elephants that the “international effort to halt the illegal killing of elephants for their ivory tusks has all but collapsed in most of Africa, leaving officials and advocates alarmed about the survival of the species.”⁶¹ Similarly, because the ESA prohibits the alteration of private property on which a member of an endangered species is found, it effectively commonizes the property, rendering it valueless to its owner. This creates strong incentives for property owners to ensure that no such animal is found on their property. As a result, property owners secretly kill the members of endangered species found on their land frequently enough for the practice to have been memorialized in the expression “shoot, shovel, and shut up.”⁶²

The legislative approach also tends to produce negative unintended consequences. For example, to avoid the commonization of their property that results from the presence of a member of an endangered species, landowners often destroy habitat that is attractive to such animals.⁶³ This “preemptive destruction” of habitat tends to undermine efforts to preserve the endangered species.⁶⁴ Indeed, the commonization of private property effectuated by the ESA and CITES can directly undermine otherwise successful conservation efforts. For example, in 1968, the Cayman Turtle Farm, Ltd. was formed as an effort to save the endangered green turtle. In a manner similar to the Handumon project, the Cayman Turtle Farm raised green turtles, released a certain percentage into the wild, and killed the remainder to sell their meat and other by-products. This program was remarkably successful, increasing the stock of green turtles in the Caribbean from 5,000 to 800,000. However, in 1978, the green turtle

⁶¹ Marc Kaufman, “Increased Demand for Ivory Threatens Elephant Survival,” *Washington Post*, February 27, 2007, at A10.

⁶² Stephen Polasky and Holly Doremus, “When the Truth Hurts: Endangered Species Policy on Private Land with Imperfect Information,” *Journal of Environmental Economics and Management* 35 (1998): 42.

⁶³ See Dean Lueck and Jeffrey A. Michael, “Preemptive Habitat Destruction under the Endangered Species Act,” *Journal of Law and Economics* 46 (2003): 27. See also Jonathan H. Adler, “Money or Nothing: The Adverse Environmental Consequences of Uncompensated Land Use Controls,” *Boston College Law Review* 49 (2008): 319–32.

⁶⁴ See David S. Wilcove et al., “Quantifying Threats to Imperiled Species in the United States,” *Bioscience* 48 (1998): 607.

was placed on the endangered species list in the United States, resulting in a ban on the importation into and trans-shipment through the United States of all green turtle products. This destroyed the economic viability of the farm. As a result, the demand for such products is again supplied by poachers who illegally kill green turtles in the wild.⁶⁵

In addition, compared to the Handumon experience, the legislative approach has been relatively ineffective. Over the thirty-five years the ESA has been in effect, very few species that have come under its protection have recovered.⁶⁶ The United States Fish and Wildlife Service itself reports only twenty-two of the nearly two thousand listed species as recovered.⁶⁷

However, the most damaging aspect of the legislative approach is its exclusivity. Legislation restricting access to endangered species ensures that the species remain in the commons. As such, it prohibits all efforts at privatization. This terminates the common law learning process and stifles environmental innovation. In essence, it outlaws the flexible common law approach that welcomes experimentation and rewards successful adaptation to circumstances, and instead enthrones an approach that rigidly adheres to a politically acceptable, predetermined course and is highly resistant to change. The perverse incentives and negative unanticipated consequences of the ESA are not recent discoveries. However, given the political influence of environmental interest groups and the general public's pro-environmental attitude, it can hardly be surprising that efforts to reform the ESA that opponents could paint as attempts to weaken protection for endangered species would be unlikely to meet with success.

In describing her efforts in Handumon, Amanda Vincent stated,

In general terms, there are two approaches to conservation. Quite a number of people feel it very important to protect the individuals of a species very closely by putting up fences or by putting trade bans on them. The other approach is . . . just accepting that those animals cannot all be protected, not each and every one of them. You need to work towards ensuring that the population survives and just some individuals will be killed and will die. The latter approach . . . is more sustainable, and so we need to work very hard to integrate what

⁶⁵ The account of the Cayman Turtle Farm is taken from Robert J. Smith, "Private Solutions to Conservation Problems," in Cowen, ed., *The Theory of Market Failure: A Critical Examination*, 341–60.

⁶⁶ See Adler, "Money or Nothing," 335. See also Joe Kerkvliet and Christian Langpap, "Learning from Endangered and Threatened Species Recovery Programs: A Case Study Using U.S. Endangered Species Act Recovery Scores," *Ecological Economics* 63 (2007): 500; and Ike C. Sugg, "Caught in the Act: Evaluating the Endangered Species Act, Its Effects on Man, and Prospects for Reform," *Cumberland Law Review* 24 (1993): 42–44.

⁶⁷ See U.S. Fish and Wildlife Service Web site, http://ecos.fws.gov/tess_public/pub/DelistingReport.jsp.

people need with what the animals themselves need and build a future for both.⁶⁸

The most negative aspect of addressing environmental problems by legislatively restricting access to the commons is that it outlaws the latter, more sustainable approach.

I offer this comparison of the common law and legislative approaches to protecting endangered species as an example of the superiority of the common law approach. However, there is nothing unique about endangered species. In general, human beings produce better results when they are free to try many things and learn from their mistakes than when they rigidly apply abstract first principles to practical problems. This is why I believe that with regard to environmental matters, a comparative assessment of the efficacy of common law privatization and legislative restriction of access will usually favor the former.

VI. CONCLUSION

Garrett Hardin's "The Tragedy of the Commons" holds three great lessons for those concerned with preserving environmental values: that commonly held resources will be overexploited; that such overexploitation cannot be remedied by exhorting individuals to behave more responsibly; and that such overexploitation can be avoided only by privatizing or restricting access to the resource. In this essay, I have argued that only the first of these lessons has been fully learned. Almost all contemporary considerations of environmental issues begin with the recognition of the tragedy of the commons. In contrast, the latter two lessons have been, at best, partially absorbed. The second lesson appears to have been completely ignored by many environmental activists who wage extensive public relations campaigns to persuade people to curtail their exploitation of environmentally sensitive common resources. And half of the third lesson is regularly ignored by public policy analysts who argue directly from the tragedy of the commons to the conclusion that legislation is required to restrict access to common resources, failing even to consider the alternative of common law privatization.

There can be no gainsaying the significant improvements in environmental quality wrought by the environmental legislation of the past four decades. This is because legislatively restricting access to common resources is an effective way of avoiding the tragedy of the commons. But whether legislatively restricting access is effective or not is not the relevant public policy question. The relevant question is whether legislatively restricting access is more effective than the alternative approach of allowing the common law process of privatization to operate. In some cases, it may

⁶⁸ *Nova: The Kingdom of the Seahorse*, PBS television broadcast, April 15, 1997.

well be, but there is good reason to believe that in many, if not most cases, it is not. To the extent that this is true, sound public policy analysis must include a comparative assessment of legislative and common law environmental regulation.

Comparative assessments that suggest common law regulation to be the superior alternative pose a difficult practical challenge. For the superior outcome can be achieved only if politicians can be induced to refrain from preempting it through legislation. This suggests that the ultimate lesson of "The Tragedy of the Commons" may be the one that is most difficult to learn—that with regard to environmental regulation, as with so many other things, patience is a virtue.

Ethics and Law, McDonough School of Business, Georgetown University